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Bovine Sterility as seen in Private Practice.*

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Until recently, sterility in cattle was of minor importance in the daily routine of the general practitioner. However, the increased number of pure-bred herds, together with their high value as breeders, brings the sterility problem to the front in our line of work.

Cattle breeders are constantly seeking advice and assistance in the care and treatment of non-breeding cows. Formerly the ordinary grade cow, if proven sterile, went quite promptly to the block, but, at the present time, dairymen are becoming more desirous of retaining the breeding qualities of their grade, as well as their pure-bred herds, and are at least willing to call their veterinarian to make an examination of the sterile cases.

The first problem is to locate the seat of the trouble, its nature and extent, that we may either discharge them as incurable or place them on the list for treatment. This phase of the work requires a considerable amount of experience in order that we make a correct diagnosis and prognosis. Practically all of these cases are traceable to abortion disease, leaving a very small percentage to be charged to malformations of the generative organs, tuberculosis and other debilitating diseases.

In my experience fully 75 per cent. of the cases of sterility are due primarily to metritis. As a result of this metritis, we often encounter cervicitis, salpingitis and oövaritis, any one of which may be secondary to the metritis, but require special treatment as well as the metritis.

In some cases we see a very marked cervicitis, which apparently is the only barrier to conception. At other times cervicitis occurs in conjunction with the chronic metritis, with very profuse discharge or perhaps very scanty discharge which may not ordinarily be noticed until an examination is made. Again, we have a salpingitis occurring in conjunction with and as a result of the metritis. I have seen some cases where the inflammation of the fallopian tubes had reached so advanced a stage of sclerosis as to completely occlude the duct, the tube being enlarged to nearly the size of a lead pencil, and hard and firm.

Sterility due to cystic ovaries has been comparatively rare, except in one herd where about 40 per cent. of the sterile cases were due to ovarian cysts. Cervicitis and vaginitis are commonly seen, and should respond readily to proper handling.

In treating chronic metritis, I have used soluble iodine in 2 per cent. solution as a douche, and in conjunction with this I have been practising uterine massage, giving the combined treatments at five to seven day intervals until relieved. A vaginal douche of salt solution, 1 tablespoonful of salt to a gallon of warm sterile water, followed by swabbing the cervix with soluble iodine, has given good results in relieving cases of cervicitis.

Cases of salpingitis and ovarian troubles of other than cystic nature are treated only by carefully massaging the parts at weekly intervals, and with varying success.

Occasionally one sees a case which, upon the most careful examination, reveals no pathological condition or malformation, but some of these apparently are benefited by massage of the uterus and ovaries. In one instance a very valuable twin heifer which failed to breed after several services was examined and found to be perfectly developed, and was subjected to thorough massage of the uterus and ovaries once a week for six weeks; the heifer conceived at the next service and dropped a calf in due time.

It would appear that a high percentage of sterility cases could be prevented if the veterinarian were called to treat all cases which, at time of parturition, show the slightest tendency to disease of the fœtal membranes or any discharge, treating these cases with hot sterile salt solution or a weak solution of potassium permanganate, and giving daily attention to them until the uterus returned to normal.

Often we hear the expression "opening up the uterus" used by the dairyman in connection with the treatment of sterility. I have seen only one case of sterility in which the cervix was apparently completely occluded, and that case was in a heifer which had never conceived, and on account of the nature of the trouble was listed as incurable.

Much difficulty is sometimes met with in gaining entrance to the cervix, and one might almost be led to believe the case to be one of atresia, but if we postpone our treatment for 24 to 48 hours, there is usually change enough in the cervical passage to admit and allow the passage of a small catheter.

* *The Cornell Veterinarian*, October, 1922.

Report of the Committee on Abortion of the American Veterinary Medical Association, 1922.*

In its report of 1920 the Committee on Abortion presented a brief summary of the available knowledge on the disease widely prevalent throughout the world and variously known as slinking and dropping of calves. contagious, infectious and epizootic abortion, abortion disease, etc. This report was very favourably received, both because of its brevity and the direct and positive manner in which the statements it contained were made. Hence, your committee of this year, realising that the latest obtainable knowledge on bovine infectious abortion, concisely and clearly stated, is urgently needed by all members of the profession, has concluded to present a report this year, embodying additional information, to the report of two years ago.

Name :

Though cattle may abort from various causes, only one kind of infectious abortion among cattle has been found to be both widespread and common. For this evil after due consideration it is recommended that the name Bovine Infectious Abortion be retained.

Definition :

Bovine infectious abortion is characterised as a rule by an interference with the development of the fœtus frequently resulting in its premature expulsion, either dead or alive, viable or non-viable. There is also a frequent manifest inflammation of the fœtal membranes and of the maternal cotyledons, together with frequent retention of the afterbirth.

Cause :

The essential cause of bovine infectious abortion is *Bacterium abortus* (Bang). The proportion of abortions due to other causes is relatively small. This germ possesses peculiar biological requirements which are found in the pregnant uterus and in the udder. The microbe localises in these places, and has been found in the regional lymph nodes of the udder and uterus. In the udder it often persists indefinitely, while in the post-parturient uterus it has been isolated after approximately two months, but usually cannot be found after three weeks. It is commonly found in the stomach, intestines, liver and other organs of the aborted fœtus.

In the bull the bacterium has been found in the reproductive organs, seminal fluid and urethral discharges. Bulls do not show as high a percentage of infection as do cows.

Bacterium abortus (Bang) has been found to remain alive and virulent for many weeks in the material in which it is expelled from the animal. It is relatively easily destroyed by disinfectants and natural germicidal agents,and is not known to multiply in nature outside the animal body.

Channels of Infection :

Infection with *Bacterium abortus* (Bang) occurs through the digestive tract. That it may occur through other channels (genital tract, urethra, etc.) has not yet been definitely proved.

Channels of Elimination :

Bacterium abortus (Bang) is disseminated by uterine discharges, aborted fœtuses and fœtal membranes of infected cows. The milk of such cows and the seminal fluid and urethral discharges of infected bulls often contain the germ.

The products of seemingly normal parturitions of infected cows, that is, fœtal membranes, uterine discharges, the surface of calves and their alvine discharges frequently harbour abortion bacilli,and are dangerous.

A cow may be the carrier and disseminator of the disease without showing symptoms of her condition.

Pathology :

Bacterium abortus (Bang) produces an inflammation of the chorion and the fœtal and maternal cotyledons in the pregnant cow. No significant pathological changes have been observed in the udder and fœtus. Abscessation and other changes in the genital organs have been found in the bull.

Diagnosis :

The diagnosis of bovine infectious abortion is possible through the study of the history and condition of the herd, by means of the serum tests (agglutination and complement fixation) and bacteriological studies of infected material.

Sequelæ :

In this disease complications are frequent. They include inflammation of various parts of the reproductive organs, which may lead to temporary and at times permanent sterility, and interference with milk and flesh production.

The micro-organisms most commonly found in connection with these conditions are the common pyogenic bacteria.

Prevention and Control :

The attempt to control bovine infectious abortion should conform to the principles of general sanitation and sexual hygiene, making the efforts specific in so far as our knowledge of the etiology of the disease permits. Some of the more important measures to be practised are as follows :

(a) The use of maternity stables and pens for *all* cows that show signs of approaching parturition and the segregation of such cows until all discharges have ceased.

(b) The isolation and care of all aborting cows and their segregation for a period of 60 days or until no evidence of abnormal conditions in or about their reproductive organs remain.

(c) Permit no animal with diseased genital organs to be served by the bull.

(d) The male animal should be kept in a separate pen apart from the herd. Breeding should be carried out on neutral ground. The female should be segregated after service preferably so tied that she cannot lick herself until all danger of leakage of infected seminal fluid from her vagina has ceased.

* *The Cornell Veterinarian*, October, 1922.

(e) Consider raw milk as an infective agent for all bovine animals except young calves. Precautions should be taken to prevent spilling milk from infected sources.

(f) The injection of living abortion bacilli at the proper time into members of infected herds has been shown to reduce the number of abortions. It must be kept clearly in mind that vaccination against infectious abortion has not passed beyond the experimental stage, and that the suspensions of living abortion bacilli now obtainable often are worthless.
The published tests on the use of dead abortion bacilli have failed to establish their positive value in the treatment or control of abortion.

(g) The possibility of transmission of bovine infectious abortion to other species of animals, particularly cattle, should be given proper attention and measures inaugurated which would effectively prevent transmission.

Dr. A. Eichhorn, Pearl River, N.Y.
Dr. T. H. Ferguson, Lake Geneva, Wis.
Dr. E. C. Schroeder, Bethesda, Md.
Dr. F. M. Hayes,
University Farm, Davis, Calif.
Dr. C. P. Fitch, Chairman,
University Farm, St. Paul, Minn.

Fighting Anthrax.

INTERNATIONAL BODY MEETS IN LONDON.

The International Advisory Commission on Anthrax set up by resolution of the International Labour Conference, Geneva, 1921, held its first meeting at 5 Old Palace Yard, Westminster, on December 6th. Sir William Middlebrook presided, and the following representatives were present :—Australia (Sir Thomas Oliver), Belgium (Dr. Gilbert), France (M. Boulin), Italy (Professor Loriga), Japan (Dr. Kanai), Sweden (Mr. S. Ribbing), U.S.A. (Dr. Dorset), Germany (Dr. Frey), India (Lieutenant-Colonel Hutchinson), and South Africa (Mr. P. W. Dixon). M. Albert Thomas, Director of the International Labour Office, and Dr. Legge, of the Home Office, were also present.

The following resolution was unanimously adopted :—"That this Commission recommends that definite steps be taken by agreement amongst the nations here represented to combat the disease of anthrax."

The Chairman described the efforts made to deal with anthrax in this country, and said a committee of investigation laid down three positions—(1) the process of disinfecting must be effective in absolutely destroying the spore ; (2) the process must be such as not seriously to damage the material for commercial purposes ; (3) the cost of the process must not make it prohibitive from the financial point of view. After experiments and tests had been made, he said, the committee found a process which proved that the first two points could be obtained.

The committee made arrangements with some large employers using wool, mohair, and goat hair to send bulk supplies of material, which was treated by the committee's process with such satisfactory results that the committee came to the conclusion that a Home Office Committee should be appointed with the object of establishing that process of disinfection and setting up the necessary station in this country for the purpose of demonstrating to the whole world its effectiveness.

Commons' Answers to Questions.

WORN-OUT HORSES (EXPORT).

Mr. Gilbert asked the Minister of Agriculture the total number of old horses shipped from this country to Belgium and other continental ports during the present year ; and what is the total declared value of such animals ?

Major Barnston : As the reply is rather long, I propose, with the hon. member's permission, to circulate it with the official report.

Following is the reply :—

16,289 horses, of all ages, have been shipped from this country to continental ports during the present year up to 31st October, after being examined by veterinary inspectors of the Ministry immediately before being shipped and passed as fit to travel and to work. This includes large numbers of carriage and riding horses and Army Remounts for foreign Governments. The number of aged horses is not available. According to the Customs returns, the total declared value of 15,200 of these horses (the only figures yet available) is shown as £723,787.

All horses shipped to the Continent of Europe, except special animals accompanied by Jockey Club certificates, are required by the Diseases of Animals Act of 1910, as amended by the Exportation of Horses Act of 1914, to be examined immediately before shipment by veterinary inspectors appointed by the Ministry, and certified by them to be fit to be carried without cruelty, and also to be capable of being worked without suffering. The arrangements for administering these Acts were entirely overhauled by the Ministry in the spring of 1921, whole-time inspectors of the Ministry being substituted for local practitioners as the officers entrusted with the examination of the animals before shipment. At the same time the traffic was placed under the supervision of one of the senior inspectors of the Ministry devoting his whole time to the work. Since that time it may be confidently asserted that no horse has been allowed to be shipped unless it fulfils the high standard of fitness insisted upon at all the ports of shipment. There have been two important results of this action. The so-called decrepit horse has been entirely eliminated from the traffic, and the trade in live horses, ultimately intended to be slaughtered for food on the Continent, has been replaced to a large extent by the trade in carcases of horses slaughtered on this side. This is shown by the following figures :—

	1920.	1921.	1922 to 31st Oct.
Number of horses shipped	58,689	45,120	16,289
	Kilogs.	Kilogs.	
Horse carcases :			
France ...	538,909	1,557,648	Not yet known.
Holland ...	3,884,320	4,817,975	
	Carcases.	Carcases.	
Belgium .	1,227	3,666	—

The Ministry also issued a revised Order in December, 1921, prescribing certain stringent requirements with regard to the fitting of vessels for carrying horses, and the arrangements for feeding and watering the animals during transit. The port inspectors go on board the vessels to see that the Order is properly carried out, and voyages are frequently made with the animals by the Ministry's inspectors.

The trade in horses to the Continent is now entirely confined to high-class animals and good working horses. Of the number shipped in 1922, 96 per cent. were between £20 and £100 per head in value. In view of the great drop in prices of horses, both here and on the Continent, during the past twelve months, it may be assumed that all these animals were of a good class. The proposal which has recently been largely advertised to impose a tax of £20 per head on these animals would result in the destruction of this trade, which is a perfectly legitimate one.

Goat Breeding Crisis.

Danger of Importing Disease.

Those who are concerned with the advancement of economic goat-keeping in this country, which is strongly advocated by the Ministry of Agriculture, are confronted with the fact that breeders are dependent on their own limited resources for the maintenance of good milking strains. There is said to be a serious risk of loss of stamina in the stock as the result of in-breeding, and there is a very general opinion among breeders that it is necessary to import new blood if sterility, malformations, and other serious troubles are to be avoided. In the Interim Report (1918) on the Production and Distribution of Milk it was recommended by the Sub-Committee on Goats—"That there is urgent necessity for the importation of new blood into this country." But the difficulty consists in the prohibition of free importation, owing to the possibility of the introduction of disease from abroad.

The British Goat Society declare that the matter is most urgent and important, and that they have done all they possibly can to induce the Ministry of Agriculture to allow goats to come into the country, their object being to obtain new blood of the Swiss varieties and also of the Nubian breed. On the other hand, the Ministry's attitude is that they have never opposed the importation of goats from the Continent, and have on several occasions permitted the British Goat Society to bring them in under suitable conditions of quarantine. During recent years, however, the position with regard to foot-and-mouth disease on the Continent has been so bad that the Ministry have been obliged, in order to safeguard the cattle industry, to refuse permission to import.

It is understood that it is possible for an animal with cloven hoof to carry the disease germs in the hoof for a period of several months, as the infection may apparently enter at the top of the hoof and become dispersed when that portion of the hoof has reached the bottom in the ordinary course of growth. The necessary period of quarantine for goats coming into this country from the Continent would, therefore, have to be a long one, and this difficulty appears to have been a serious obstacle to the British Goat Society in carrying out importations a year or two ago, when the Ministry had actually given them permission to do so.—*The Times.*

Importation of Animals Bill.

Debate on the Second Reading.

In the House of Commons on Thursday, December 7th, the Minister of Agriculture (Sir R. S. Sanders) moved the second reading of the Importation of Animals Bill. A rejection amendment was defeated by 379 votes to 27.

Sir Robert Sanders said: Following the resolution passed in both Houses last Session in favour of the removal of the embargo on the importation of Canadian cattle, negotiations were entered into and an agreement was reached with representatives of the Canadian Government. The terms of the agreement were to the effect that Canadian store cattle should be admitted into this country provided they were shipped direct from a Canadian port to a port in Great Britain; that they were kept under veterinary observation for three days immediately before embarkation; that during the voyage they were thoroughly examined by a veterinary officer of the Dominion; and that they were landed at specified landing places in this country and examined by port officers. The movement from the landing places was to be controlled by licence. It was further provided that all imported animals should be marked, and that a fee not exceeding 6d. per animal was to be imposed to cover the expense on this side. Canadian cattle capable of breeding could only be landed on the authority of a general order, made by the Minister and laid before both Houses of Parliament, an essential part of such order being that the animals must be accompanied by a certificate that they had, within one month before shipment, been examined and found free from disease. The Minister of Agriculture retained the power to suspend importation if cattle plague, pleuro-pneumonia, or foot-and-mouth disease should appear in Canada, or to deal with any suspected outbreaks of disease found in any cargo, and that compensation was not to be payable in case of slaughter at the place of landing. The Bill carried out the conclusions arrived at by the Conference.

Irish Cattle.

With regard to the landing of cattle from Ireland, it was a fact that, in considering the possible cause of the wide-spread nature of the foot-and-mouth disease outbreak which occurred in the early part of the year, the veterinary officers of the Ministry of Agriculture came to the conclusion that the spread of infection was largely due to the system by which consignments of Irish store cattle were imported into this country and taken from market to market in the course of a few days, with the result that if infection were picked up by any large consignments of cattle, it would be quickly distributed over a wide area. In order to prevent such a spread of infection in future, an order was issued last July which regulated the importation of Irish store cattle and required that they should only be removed by licence, and should be detained for six days after arrival in this country. As a result of that outbreak, a Departmental Committee was set up. In their interim report they recommended that this restriction on the movement of Irish cattle should be made permanent, and the same principles would be adopted in the arrangement which had been agreed to in regard to the import of cattle

from Canada. His officers were convinced that those regulations represented the minimum safeguard necessary to prevent the recurrence of such a spread of foot-and-mouth disease. The cost of the last outbreak was nearly £1,000,000. It would also be a very unwise thing to lessen in any way the confidence of the breeders of pedigree cattle. The Bill was not being taken with that leisurely procedure which the House would have preferred for a Bill of such importance, but that was being done to meet the very strongly-expressed wishes of the representatives of Canada. Canada not only attached great importance to the Bill being passed, but to its being placed on the statute book as quickly as possible. A small band of members, without resorting to obstruction, could prevent the Bill being passed this Session, but that would not be in the wider interests of the country. The contentious point was fairly simple. It was that relating to Irish cattle, and he was ready to consult with hon. members as to the easiest way in which that direct issue could be raised.

Mr. A. M. Samuel (Farnham, U.) asked if the Minister proposed to take powers to supervise the stabling accommodation on board the ships, so that the beasts might not suffer injury in heavy weather. (Hear, hear.)

Sir R. Sanders: That is done already.

Restrictions on Irish Cattle.

Capt. Craig (Antrim, U.) (following a presentation of agricultural opinion by Mr. G. Lambert and others) said that he thought it was a great pity that the House passed the resolution last Session in favour of removing the embargo on Canadian cattle, but as it had done so he and his friends were of opinion that the pledge should be fulfilled; and if this Bill had contained nothing else he would have supported it. But while on the one hand it lifted the embargo on Canadian cattle, on the other it imposed a very serious embargo on the importation of Irish cattle to which the latter had never hitherto been exposed. So long as it contained those restrictions on Irish cattle he could not support the Bill. For twenty-eight years prior to June, 1912, there was no foot-and-mouth disease in Ireland. The proposed restrictions would be most unfair and most expensive, and were bound to raise the price of meat. The Irish trade amounted to £35,000,000 to £45,000,000 a year, but the number of Canadian cattle likely to come into this country during the next five or ten years was not likely to exceed about two hundred thousand head, which, at £20 per head, meant a total of about £4,000,000. He was advised that the proposed detention would have no effect in the direction of preventing the spread of foot-and-mouth disease, from which Irish cattle were admittedly free; and he submitted that the proposal was in a large measure the result of panic and of pressure brought to bear by British agriculturists upon the Board of Agriculture not to remove restrictions upon the importation of cattle, even after the necessity for those restrictions had disappeared. He believed that the opportunity had been seized by the officials of the Department to have the detention of Irish cattle coming to this country made statutory. The proposal would be very oppressive to large classes of people, and its effects would be important, because the rents of farms in Ireland and the annuities payable to the Government under the Wyndham and other Acts for the purchase of farms depended greatly upon the price of the animals raised there.

The Rejection Moved.

Mr. Harbison (Fermanagh and Tyrone, Nat.) moved the rejection of the Bill, which, in respect of the proposed unnecessary embargo upon Irish store cattle, he contended, violated the Treaty between Great Britain and Ireland, of which an underlying principle was that there should be free trade between them. Not only were they lifting the Canadian embargo, but they were placing an embargo on Irish cattle at the dictation of Canada. The thing had been done over their heads. It was the most tyrannical piece of legislation he had ever known. He urged the Government to re-consider the matter or at least postpone the Bill until an opportunity had been given for a consultation between the Irish and Canadian Governments. He was sure that a *modus vivendi* would then be found. There was no reason for all this haste, since there was not a single Canadian beast which could be imported into this country before next September. A vital mistake was being made from the English as well as from the Irish point of view. If the Government would not consent to postponement, he urged them to strike Ireland out of the Bill.

Mr. J. H. Simpson (Taunton, L.), who seconded the amendment, said that this was the first occasion on which he had regretted his election, because it entailed the absence of a distinguished member of the Government who was an expert on this matter. This question had been made a political one, but he had no mandate to support the Bill. He felt that it had not been sufficiently considered, and that it ought not to be rushed through the House at the tail end of a very short Session. The safeguards proposed were entirely insufficient. Were we going to run the risk of allowing infectious American cattle to come over here as Canadian stores? Then, with regard to tuberculosis, that was not one of the diseases for which the veterinary inspector on board ship was to look, and there was no reason why we should import that disease. The question of cruelty had been brought to the notice of hon. members during the last few days. It was said that arrangements were now made on board ship to avoid cruelty, but hon. members knew perfectly well that this was impossible. (Cheers.) He had spoken to drovers who had come across in these cattle ships, and their descriptions of the sufferings of the animals on board in a storm were perfectly horrible. Some arrangements should be made to make certain that this cruelty was prevented.

Mr. Gardiner (Kinross and West Perth, N.L.) said his experience showed that, whereas Canadian cattle in every case were free from disease, in every lot of Irish cattle purchased there were a great many wasters. He urged that there should be continuity of policy on this question, and said that agriculturists had made their arrangements in the light of the decision of the last Parliament. He claimed that the Irish dealers had already put the six days' detention period in operation voluntarily for their own purposes. He was satisfied that no danger existed in importing Canadian cattle, and said there was more cruelty in the traffic from Ireland than could occur on the magnificent

steamers that would carry the Canadian animals to this country. If we were to maintain the fertility of our soil, it was imperative that we should have as many cattle on the land as possible.

THE COMMITTEE ON FOOT-AND-MOUTH DISEASE.

Mr. Pretyman (Chelmsford, U.), in the course of his remarks, said that if the facts were as stated by Captain Craig he would support his. hon. friend in the division lobby. But it was a complete misapprehension to suppose that the agreement made between the British and Canadian Governments would penalise Irish stores. The six days' detention had nothing whatever to do with that agreement. The Committee appointed to examine into the recent outbreak of foot-and-mouth disease had completed their report that day. They had reported that it was unfortunately quite impossible to prevent sporadic outbreaks of disease from uncontrollable causes. The cattle which started the recent outbreak and spread the disease all over the country came into the country perfectly clean and healthy, but they contracted the disease in the market at Hull, and carried it to Newcastle and other centres. There was no question of any additional quarantine upon Irish cattle. The Committee's recommendation to which it was proposed to give effect by the Bill was that after the cattle had been landed they might be taken to any market which the vendor chose, and if sold to a person who was going to graze them, not a farthing of additional cost would be incurred, but if they were not sold and were taken to some premises, they must remain there for six days before being removed in order that if they contracted disease the animals might not spread it by being taken to one market after another. Irish cattle dealers at a meeting in Dublin on October 19th last passed a resolution pledging themselves to expose stocks for sale only after six days' detention. British agriculturists were prepared to accept the national decision which had been given in this matter, although they disagreed with it.

Mr. Falconer (Forfar, L.) supported the Bill. He said that if they broke faith with Canada, they might arouse feelings which it would be difficult to lay to rest. Mr. Bruford (Somerset, Wells, U.) supported the Bill because of the pledge but he feared it would not be in the interests of agriculture. If the Government did not give the farmers adequate safeguards against dangers of disease, he should vote against the third reading.

Many other members contributed to the debate, at the close of which the amendment was rejected, as stated above, and the Bill was read a second time.

LONDON "SOCCER."

The Camden Town College match against Goldsmith's College, on Wednesday, December 6th, resulted in a defeat by 2 goals to 1. Up to the interval the Veterinary College had the better of the play, but the true form of Goldsmith's was seen in the second half. After R. C. Locke had scored a good goal, Goldsmith's exerted considerable pressure, which was rewarded by their two goals.

This week the Second Round of the Inter-College Cup is to be played *versus* Battersea Polytechnic College.

Peripneumonia and Supplementary Horns.

"During my travels through the French Sudan," writes Curtis G. Lampson in *The Field*, "I came across many of the cattle, notably pack oxen, who had the peculiar characteristic of possessing what appeared to me to be at first the hereditary transmission of a third horn. It was only on my return to Bamako that I heard the interesting history connected with this horn-like eruption. The peripneumonic infection, which is a notable factor in the killing off of a large number of cattle throughout Mauretania, and the French Sudan, especially in the Sahel district, is now known to have existed as far back as authentic records show. The Moors of these districts, whose ability in all matters far outdoes that of the other indigenous population, realised the gravity of this infection, and with apparent remarkable ingenuity discovered the beneficial results of vaccination. Their method, which was almost identical with that of Jenner, consisted of utilising a diseased lung for prophylactic purposes. An infected beast was slaughtered and a portion of the lung removed: some tribes macerated it by burying it in earth for two to four days and others by soaking it either in milk or water for the same period. On the completion of this masceration a small portion was injected sub-cutaneously on the bridge of the nose. The skin was incised and lifted by means of an ordinary knife, and the piece of lung pushed in with a blunt instrument resembling a punch. If the infection which resulted, spread too rapidly or over too wide an area, it was limited by branding a deep circle around the infected part. The results of this primitive method of inoculation—which is still performed to-day—was that the periosteum of the nasal bone was attacked, and there resulted a horny growth. I myself saw a specimen which measured 16 c.ms. in length, and whose base was 5 c.ms. in width, and 12 c.ms. long. The same method of vaccination with two variations is used to-day by the veterinary department of the French Colonial Office.

"The liquid of the lung is used instead of the lung itself, and a caudal injection is made in place of a nasal one. The Moors, however, even now refuse to adopt this caudal injection, owing to the fact that in many cases the tail drops off, and tail-less oxen are not sought after by the native buyers, for they are unable to defend themselves against the swarms of flies that exist in these parts. In place of burying the diseased lung in earth or soaking it in milk or water, the present-day method is to mix the infected liquid with glycerine, which permits the keeping of the vaccine for an indefinite period. It will be seen, therefore, that Jenner's discoveries, which first benefited science comparatively a few years ago, was well known to the Moors of the central portion of the North-African continent many hundred years ago.

"There is another factor which causes these horn-like growths in goats and sheep as well as in cattle, though in this case they never attain the same dimensions. The cows of the French Sudan are poor milkers, and the Moors in order to prevent the calves sucking their mothers cut an incision along the skin on the bridge of the nose and insert into the cut irritating matter, using as an irritant salted Karite butter or a mixture of onion and tobacco. As soon as the sore heals the same operation is performed again, until after several similar operations the pain becomes so aggravated that the calf is unable to suck its

mother. Kids and lambs are treated in the same manner. It is only in districts thickly populated by Moors and Pheuls that this supplementary horn is found. Other pastoral tribes do not practise this brutal form of weaning, but resort to more humane methods. They insert a wooden cylinder in the mouth of the calf after the fashion of a bit, which is held in place by a cord, which, passing behind the ears-renders sucking impossible. They also prevent the calves sucking by means of a nose collar of pointed pieces of wood, which, pricking the udder of the mother, makes her reject her young when he approaches her teats.

"A native veterinary surgeon told me that outside the herds of Mauretania and the Sahel district he had only seen eleven sheep with the supplementary horns and only two cases among goats, which proves that it is only among the Moors and to a lesser degree among the Pheuls that this method of weaning is adopted. In some districts where the vaccination is practised on a large scale, a great number of the cattle possess these supplementary horns, and it was in 1880 that the French explorer, de Rochbrune, when visiting one of these districts, thought he had discovered a new variety of cattle. He communicated with the foremost zoological societies of Europe, naming them Bostriceros! It was in 1891 that Cornevin discovered the error of de Rochbrune. He closely interrogated the natives and found by this means that the presence of these horns was not hereditary. He also found that these horny growths were never seen on very young stock, and after finding that similar malformations were seen on both goats and sheep who are immune from peripneumonia, he established the true facts."

A Study in Changes of Sex.

The following article was recently contributed to *The Times* by the scientific correspondent of that paper.

Dr. J. H. Orton, senior naturalist to the British Marine Biological Association at Plymouth, and Dr. R. Spärck, working at the Danish Biological Station at Limfjord, appear to have settled independently the very remarkable and long-disputed changes of sex in the oyster. The edible oyster is first a male, then a female, then quickly becomes a male again. Probably this alternation goes on indefinitely unless it is interrupted by the usual fate of edible oysters. The rate of change, moreover, depends to a considerable extent on temperature.

Many hermaphrodite animals, that is the creatures in which a single individual houses the organs of both sexes, are incapable of self-fertilisation, the male and the female organs being active at different times. Some close allies of the oyster have separate male and female genital glands; in others different parts of the same gland produce eggs and male cells, and there is a separate exit for the two sets of products. The oyster either has never possessed, or more probably has discarded, all the trappings of sex. There is a single genital gland and a single duct. At one time male cells are produced and discharged into the sea-water in clouds. At another time egg-cells are produced, and are fertilised by male cells drawn in from the surrounding water. The eggs begin their development before they are extruded, but almost immediately after leaving the sexual aperture find their way to the gills, to which they become fastened by a white secretion. At the end of a fortnight the mass of developing eggs, known as "white spat," darkens from the presence of pigment in the developing embryos. At this stage the embryos pass out into the open sea, where they spend their short life as free swimming larvæ before settling down on the bottom as baby oysters.

Changes of Sex.

There is no difference in the external appearance of the oyster in its male and female phases, although, if the shell-fish be opened, microscopical examination of the sexual gland shows the difference between the minute mobile sperm-cells and the large inactive egg cells. The discrimination can also be made by examining the spawn when it is liberated. Observers have also succeeded in boring a small hole through the shell (which is sealed up naturally very quickly) and taking a sample of the contents of the gland.

When it is sexually mature for the first time the oyster is male. Next, after a varying period, it becomes a female, and very soon after the discharge of the embryos it again begins to liberate male cells. Dr. Orton has described how one individual oyster settled down from its larval life some time after June 9th, 1921; it became sexually mature and spawned as a male in that year. On July 3rd of this year the same individual had spawned as a female, and was carrying thousands of young; but by July 18th it was again sexually mature and ready to spawn as a male. The last observation was made by the method of shell-boring and tapping, operations from which the subject recovered. Dr. Orton hopes to follow the further history of this individual, which has been proved to have had three experiences of sex within one year. The sequence has been established by many other observations made both by Dr. Orton himself and by Dr. Spärck.

The Effect of Temperature.

The very rapid change from female to male is most surprising, and is an experimental confirmation of a statement made long ago by Möbius, who said that in European oysters a specimen directly after breeding produced male cells. Dr. Spärck has also come to the conclusion, from his own observations, that it is independent of temperature.

On the other hand, the Danish observer thinks that temperature has a marked effect on the reproduction of the oyster. The age at which breeding begins has been much disputed, and he attributes the difference of opinion to the observations having been made in different regions. Those who got their material from Southern France have maintained that breeding took place at an early age; students of the oysters of Northern Europe have found breeding oysters to be older. Dr. Orton correlates the rapid changes of the oysters he studied with the unusual temperature of British seas in 1921. Dr. Spärck has investigated several thousand oysters in the relatively cold water of the Limfjord in North Denmark, and has never found a female less than three years old, or a male breeding in the year in which it settled.

The duration of the male stage depends on temperature, so that the colder it is the longer it lasts. In the region he has investigated, the male stage lasts from three to four years, and the female stage is a brief incident lasting only a few weeks. Thus oysters of these northern waters can produce young only every third or fourth year, and therefore probably only three or four times in their whole life.

Dual-Purpose Cow Debate.

Mr. Howie and Miss Glegg, of the Agricultural Department, Edinburgh University, recently visited Newcastle, to meet the Agricultural Students' Association at Armstrong College for an inter-debate.

Mr. Howie proposed the motion that "The dual-purpose cow is of greater value to the British farmer than the dairy cow." He defined a dual-purpose cow as an animal that will produce a high yield of milk at an economic rate of production during its lifetime, and at the end of that time produce a high-grade carcase of cow beef. He showed how in running a purely beef breed it is sometimes necessary to maintain a herd of cows to act as nurses. This could never be classed as an economic practice. Cows of a dual-purpose order were, maintained the speaker, less prone to tuberculosis. The speaker showed how far one may go wrong in estimating a dairy animal's yield merely from showyard points, such as the wedge-shaped form, fine silky hair, and good skin, milk vein, etc.

Mr. J. H. Thompson, Armstrong College, seconded the motion, and emphasised the point that a heavy milking animal, working under high pressure, is very liable to go wrong at an early age, and the farmer is left with a poor quality carcase on his hands. The speaker deplored the all too common practice of producing any sort of calf by an inferior bull, as is done by many dairy farmers, whereas with a good dual-purpose cow mated to a superior bull a useful calf could be produced.

The Opposing View.

Mr. E. Capstick, B.Sc., N.D.A., in opposing, first emphasised that the difficulty of getting the pure dual-purpose animals to breed true rendered it an uneconomic proposition. This he showed by the aid of Mendel's theory of heredity. From every four animals produced in the second generation only one will combine milk and beef capacities. One will have, perhaps, those qualities which, however, will not breed true; one will have neither beef nor milk capacities; and one will have milk only. The speaker pointed out that a beef animal should be a quick maturing animal, while a milk animal does better if it matures somewhat slowly. Mr. Capstick quoted the results of a Yorkshire experiment, showing that the cost of production from a cow yielding 650 gallons worked out at 6½d. per gallon, whilst with a cow yielding 1,000 gallons cost was only 4½d. per gallon. Finally, as this country could not supply both beef and milk, it was better to stick to milk, and bring store cattle from within the Empire.

Miss Glegg, N.D.D., of Edinburgh, seconded the opposition. She instanced the hardiness of the dairy breeds, and the greater ease of breeding for milk and constitution than for beef and milk.

Professor Gilchrist, who was against the motion, said that he could become reconciled to a "coalition" cow, but never to the dual-purpose cow.

Mr. Wightman, B.Sc., supported the dual-purpose cow, of which he had some experience, quoting as an example the Devon cow, which produces the famous Devonshire cream, and at the same time bred calves which showed up well at the London Fat Stock Show.

On a vote, the motion was lost by a large majority.

The Veterinary Record.

16th December, 1922.

DANGEROUS DRUGS.

A correspondent asked last week whether he had to keep a register of every half-grain of morphia he uses at home and every half-ounce of tincture of opium he dispenses. As this question was asked very shortly after we had published the whole of the regulations relating to the use of Dangerous Drugs (see *Veterinary Record*, November 18th), it appears probable that some more concise statement of the law on the matter is desirable.

Drugs and Quantities. The drugs referred to are morphine, cocaine, ecgonine, diamorphine (heroin) and their respective salts, and medicinal opium, and any preparation which contains not less than one-fifth per cent. of morphine or one-tenth per cent. of the other drugs.

These drugs may be *administered* by a duly registered veterinary surgeon (or under his direct supervision) in the treatment of any animal without let or hindrance.

Prescriptions and Dispensing. But for giving or dispensing prescriptions containing these drugs in quantities greater than those mentioned:—

1. The veterinary surgeon must make out the prescription in writing, bearing date, signature and address, and also the name and address of the person to whom the prescription is given, as well as the words "For Animal Treatment Only."

2. Such a prescription will only be dispensed once, unless the prescription directs otherwise, but no drugs may be supplied more than three times on the same prescription.

3. *Marking of Packages.* When morphine, cocaine, ecgonine, diamorphine or their respective salts, or any medicinal opium is supplied, the package or bottle must be plainly marked with the amount of the drug in the package or bottle, and in the case of preparations made from these drugs, the total amount of the drug in the preparation and the percentage must be marked.

4. *Register.* On purchasing these drugs a record must be made at once of the date, name and address of person supplying, amount obtained. and form in which obtained.

Similarly, when drugs are supplied in quantities greater than that mentioned, a record must be kept of the date, name and address of the person to whom supplied, the amount and the form in which supplied. No record need be kept of drugs actually administered by the veterinary surgeon.

Full details as to the form of Register are given in the regulations published at pages 858 and 859 of the *Veterinary Record*.

5. *Penalty.* Any infringement of these regulations may lead to the withdrawal of authorisation to be in possession of the drugs.

EXEMPTIONS. The following preparations are exempt from the regulations :—

Cereoli Iodoformi et Morphinæ, B.P.C.
Emp. Opii, B.P., 1898.
Lin. Opii B.P.
Lin. Opii Ammon., B.P.C.
Pasta Arsenicalis, B.P.C.
Pil. Hydrarg. c. Opio, B.P.C.
Pil. Ipecac. c. Scilla, B.P.
Pil. Plumbi c. Opio, B.P.
Pil. Digitalis et Opii Co., B.P.C.
Pil. Hydrarg. c. Cret. et Opii, B.P.C.
Pulv. Cretæ Aromat. c. Opio, B.P.
Pulv. Ipecac. Co., B.P. (Dover's Powder).
Pulv. Kino Co., B.P.
Suppos. Plumbi Co., B.P.
Tablettæ Plumbi c. Opio, B.P.C.
Ung. Gallæ c. Opio, B.P. (Gall and Opium Ointment)
Ung. Gallæ Co., B.P.C.

In addition, of course, it will be remembered that any medicine or preparation containing less than one-fifth per cent. of cocaine or one-tenth per cent. of the other drugs is also outside the regulations.

Veterinary surgeons should note, moreover, that by a regulation issued on August 13th, 1921, farmers and stockowners who have obtained a certificate for the purpose from the Chief Officer of Police of the District are allowed to be in possession of tincture of opium (laudanum) for use solely in the treatment of animals, subject to the following conditions :—

1. They may not have in possession at any one time more than 32 ozs.

2. They may only purchase from the person named on the certificate.

3. The certificate must be produced on the occasion of each purchase, and the amount purchased entered on it.

4. The tincture of opium must be kept under lock and key, and only used for administration to animals. Each vessel containing the tincture shall be labelled "For administration to animals only."

Clinical and Case Reports.

The Editor will be glad to receive from members and others contributions to this column of reports of interesting cases

"Grass Disease" in the South.

By G. P. MALE, M.R.C.V.S., Reading.

That the so-called "grass disease" has extended to the South of England is, I fear, now established, but whether it is widespread in its distribution, or only present in isolated cases, remains to be seen.

Two cases occurred in my practice this year, one in August and one in September, and it is hoped that other practitioners will record any cases met with, so that, if possible, the method of infection may be ascertained and the disease prevented.

One horse was turned out to grass, and the other—a hunter—had been brought up about a fortnight previously into the stable. The former had been grazing on pasture which had been dressed with manure from a remount depot to which horses had come from all parts of the British Isles, and in which I learned afterwards there had been two cases of "grass disease" during the summer. It would be interesting to know if horses can be carriers of this disease; whether the causal organism is present in their fæces or is to be found in hay and grass seeds. If in the latter, then one would hesitate to buy if they had been grown in the districts in Scotland where the disease is prevalent. Of the two cases, one was acute, and the other a chronic form of the disease. I will not describe the symptoms in detail, but briefly give the characteristic features and enclose photographs of the chronic case which show the typical tucked-up appearance.

This animal, an aged cart gelding, was noticed ill on September 1st, and was slaughtered on September

26th, as the owner would not continue treatment, the patient not being of great value.

Slight abdominal pains were shown at intervals during the first two days only. The temperature never rose above 102.5° F. Constipation was a marked feature, the alimentary tract being paralysed, so that only very small quantities of fæces were passed at a time, and this only when enemata were given. Physic had very little effect. In the early stages, the features which distinguished it from an ordinary case of impaction of the bowels were :—

1. Tenesmus of the jaw muscles, so that it was most difficult to open the mouth.
2. A curious anxious facial expression, a drooping of the eye-lids, and a sudden appearance of waking up when approached.
3. The horse stood almost continuously, was restless at times, walked round in circles, backed into a corner, and stood with arched back and hind legs well under the body.
4. Tremors of the muscles of the flank, neck and elbow.
5. Patchy perspiration, especially noticeable under the tail, where it was of a soapy character.
6. Obstinate constipation which nothing seemed to relieve.

The horse appeared anxious to feed, especially on the grass, but after eating a mouthful it would refuse to take any more, and appeared to have difficulty in swallowing it, in fact, the owner thought its teeth were wrong or that it was choked.

At one period there was some difficulty in breathing and a discharge came from the nose.

There were good and bad days, and sometimes one was hopeful of a recovery.

The horse was able to drink, and large doses of potassium permanganate were put in the water, but sometimes he would refuse any liquid for days together. Aperients and hypodermic injections of strychnine were also given. Botulinus antitoxin was administered intravenously in large doses every second day commencing on the 13th day from the start of the disease, and at first it appeared to have a good effect. In order to give it a fair trial it should be given at the earliest possible date.

Mr. Buxton was present at the *post-mortem* examination and kindly confirmed the diagnosis. The contents of the bowels were becoming liquid and diarrhœa would have supervened had the horse lived.

Besides the congestion of the liver, kidneys, lungs, and brain, a marked feature was the appearance of the spleen, which was nearly twice its usual size, was firm in consistency, and much congested. The heart was dilated, and the muscles were paler than usual.

The acute form was seen in a hunter in August.

Acute abdominal pain was shown on the second day ; on the third day the mare seemed better, but was unable to drink or to swallow. If hay was taken into the mouth it was expelled again. Tenesmus of the masseter muscles was marked and the superficial veins of the head were very prominent. Patchy perspiration and twitching of the muscles were also present. On the fourth day the brain symptoms were exaggerated, the mare became violent, tried to climb the walls, pressed her head against objects and finally fell down, the galloping action of her limbs continuing until it was despatched.

At the *post-mortem* examination, the stomach and bowels were inflamed, and the spleen, liver, lungs, and brain considerably congested.

A Pigmentation Query.

By George Yates, F.R.C.V.S., Harrow.

Subject.—Alsatian wolfhound, purchased at the age of seven weeks and brought to my notice at seven months. A fine specimen of its kind.

Symptoms.—Suffering from a skin affection localised on the muzzle, nose and lips, entailing acute irritation. The left side of the nose, together with the corresponding side of upper lip, had lost its pigmentation, and that only quite recently, giving the appearance of a parti-coloured nose quite spoiling the animal's looks.

Remarks.—" Butterfly nose " is a condition frequently met with in quite young dogs, to be followed later (at least, in the majority of cases) by complete pigmentation. But this reverse condition I have, until now, never encountered, and it is for that reason that I seek the aid of your columns for the opinions and experience of my colleagues.

Incidentally, this occurrence recalled to my mind a conversation some years since, with a breeder of schipperkes, who volunteered the information that for purposes of sale or show these defects could be obliterated for a quite considerable period by the application of dyes, the latter often inducing a very troublesome skin eruption. Is this so ?

Trypanosomiasis of the Pig.

By J. Malcolm Armfield, M.R.C.V.S., Tanganyika Territory.

On August 5th, 1922, an account of trypanosomiasis of pigs in French Guinea was reported in the *Veterinary Record*, and as such communications appear to be scarce, the following may be of interest, especially to veterinarians in the tropics.

On September 2nd, 1922, the death, after only four hours' illness, of a large white sow, was reported to me. I made a *post-mortem* examination and noted the following :—The carcase was in good condition,

not emaciated; the under surface of the belly and thighs showed a slight pink rash; the throat glands were normal; there was considerable gastro-enteritis and enlargement of the liver, the latter weighing 9½lbs. and being engorged with blood, while the stomach was intensely inflamed, the large and small intestines being affected to a rather less extent. The spleen was normal and no other abnormality was found. A smear taken from peripheral blood showed numerous trypanosomes which appeared to be *T. vivax*. It is an unusual thing for this organism to be responsible for death. A few weeks previously another sow had died in a similar way. No blood smears were taken, but there seems to be a likelihood that it died from a similar cause. The owners had thought the cause was an almost exclusive diet of ground nuts. After the oil had been extracted from the nuts the residue had been used very freely as food.

At 6 p.m. on September 24th, a six weeks' old pig died at the same place. Unfortunately, I was not informed till late the following day. I had been visiting these sties only two hours before this pig died, and there was no reason to suspect illness, as nothing seemed amiss. It was considered hopeless to be able to find trypanosomes so long after death (twelve hours), so no blood smears were taken. *Post-mortem* examination showed more than half the tissue of both lungs to be diseased; this diseased tissue floated on water and was paler in colour than healthy lung. Two other six weeks' old pigs were found to be ill, but both recovered after receiving a dose each of castor oil. Both showed a slight rise of temperature, but blood smears on two occasions proved negative. No further deaths have been reported to me up to October 18th.

There are about thirty pigs on these premises, which are situated in a township several miles from an actual fly belt. An occasional tsetse fly may, however, be caught. About a mile from these premises is a piggery containing about 300 head, and no sickness has been found amongst any of these.

The following table gives a comparison between this outbreak and that in French Guinea :—

TANGANYIKA. Our pathologist reports the organism to be *T. vivax*. One certain death from trypanosomiasis amongst thirty pigs in seven weeks. Outbreak occurred at the end of the dry season.

FRENCH GUINEA. It resembled *T. pecaudi* or *T. brucei* more nearly than *T. dimorphon* or *T. cazalboui*. Lost thirteen out of twenty-two pigs in six weeks. Occurred in the rainy season.

STARVING A HORSE.

A man named Arthur Moore was fined £20 at Sheffield for cruelty to a horse. It was stated that the defendant borrowed the animal on the condition that he fed it, but when the horse was returned it was found to be so emaciated that every bone in its body was showing. A witness said the horse was nearly mad, and had to be destroyed. It behaved like a wild beast when offered food. A veterinary surgeon said that the horse was about as thin as any horse could be and still live. The magistrates described it as a case of cold-blooded cruelty.

Association Report.

Scottish Metropolitan Division.

Dr. BRADLEY on "THE ONE PORTAL SYSTEM."

A general meeting of this division was held in the Royal (Dick) Veterinary College, on Wednesday, October 25th, at 2-30 p.m.

The President, Mr. J. Henderson, occupied the Chair. The members present were :—Messrs. J. Aitken, O. Charnock Bradley, W. W. Peggie, T. M. Inglis, A. Gofton, E. J. H. Sewell, J. Taylor, J. H. Jones, A. K. Cameron, S. Robson, T. D. Connochie, R. H. Connochie, S. McHattie, D. C. Matheson, W. M. Mitchell, Wm. C. Miller, J. R. Greig, A. Baird, and the Secretary. The visitors included Messrs. Wm. Woods (Wigan), W. S. Lornie, J. R. Haddow, D. C. Gill, and Major J. J. Dunlop.

The minutes of the previous meeting, having been published in the *Record*, were taken as read and confirmed.

The Victoria Veterinary Benevolent Fund.—It was unanimously agreed that the Secretary forward a donation of £2 2s. to this most deserving Fund.

Nomination of New Members.—Messrs. W. Fulton (Auchterarder), and D. L. McWhirter (Edinburgh), were nominated for membership.

ELECTION OF OFFICE BEARERS.

President.—The retiring President nominated Mr. W. W. Peggie (Biggar) for the Presidentship for the year 1923, and Mr. Peggie was unanimously elected.

Vice-Presidents.—Messrs. J. Taylor, J. Aitken, and J. Henderson.

Council.—Messrs. W. Ballantyne, O. C. Bradley, A. Gofton, and T. M. Inglis.

Auditors.—Messrs. A. Baird and S. Robson.

Secretary and Treasurer.—Mr. R. G. Linton.

THE ONE PORTAL SYSTEM.

Principal O. Charnock Bradley, M.D., D.Sc., M.R.C.V.S., then addressed the meeting on "The One Portal System" as follows :—

Principal O. CHARNOCK BRADLEY: The Royal Charter of 1844 created a body politic and corporate, and brought into existence the veterinary profession. By it, certain rights and privileges were conferred upon the Royal College of Veterinary Surgeons, and by it upon the Royal College was imposed the duty of protecting the public by ensuring a reasonable minimum standard of attainment and skill on the part of those who sought to enter the profession. It is not possible to over-emphasise the importance of the duty of the Royal College of Veterinary Surgeons in this respect. And it may be claimed, without fear of question, that during the past 78 years the body politic and corporate has conscientiously guarded the public interest to the utmost limit of the powers granted by the Royal Charter. The Charter of 1844, relating as it did to a new professional creation, was not trammelled by tradition or hampered by a regard

for vested interests. It was possible, therefore, to provide that admission to the veterinary profession should be through one portal and one portal only; and no reasonable person will deny that, of all imaginable modes of entry, this is the best, as ensuring a uniformity of standard by which the public may assess the qualifications of candidates for their favour.

There can be little doubt that recent movements by certain Universities have been directed towards the opening of other portals, and the consequent destruction of the existing assurance of uniformity, which can only be maintained by subjecting all candidates to the *same* examinations.

No one can do other than rejoice that there are University degrees in veterinary science. They stamp the possessors as of superior training in certain directions, and through them the whole body of the veterinary profession gains in honour. But they do not indicate a uniform standard of general professional skill and knowledge.

At the present moment three Universities in this country confer Veterinary degrees; but there has never been a suggestion that the several examinations for degrees should be uniform, or that the same special training should be demanded by the different Universities. Two of the three Universities have framed ordinances which ensure that the candidates for degrees shall possess a higher standard of knowledge in a definite number of scientific subjects, and have refrained from entering into competition with the Royal College of Veterinary Surgeons in testing the *general professional* knowledge of candidates.

No uniformity has been attempted, and it is certain that it is not humanly possible to ensure uniformity where different teaching and examining bodies are concerned. In the first place, no one can claim that the teaching staffs of different institutions are uniformly able man for man. It is a rare institution that has not a weak spot somewhere. And the standard of examinations, everyone will confess, naturally varies with the teaching standard. This is inevitable. Further, if the power to grant licences to practise were conferred upon the three Universities that have already instituted veterinary degrees, it is very safe to predict that other Universities would quickly demand similar powers. And if Universities, why not those veterinary colleges that are not integral parts of Universities? No very vivid imagination is needed to picture entry into the veterinary profession as becoming possible through as many portals as there are to the medical profession. But the vision becomes a nightmare when it includes the creation of new University faculties for the instruction of a handful of veterinary students, for there are few of the subjects of the curriculum that could be taught adequately in existing University classes. Even as matters are at present, the veterinary profession has more schools in proportion to the number of its members than has the medical profession. So far as information goes, the medical schools rate as one to every 900 members of the medical profession, while the veterinary profession is provided with a ratio of one school to every 640 names on the Register of Veterinary Surgeons.

But there is no need to labour this point, nor to assume that every University in the kingdom would create veterinary faculties and demand the right to grant licences to practice. If only the Universities of London, Edinburgh, and Liverpool, with the addition of, say, the two older English Universities were allowed the privilege, it may be safely asserted that five different and distinct standards would immediately emerge. Each University develops its own individual ideas and ideals. It may be suggested that a safeguard against this could be erected by giving the power of supervision, co-ordination and control of the examination standard to the Royal College of Veterinary Surgeons; but such a safeguard could never be other than fictitious. Imagine, for a moment, the result of any criticism by the Royal College of Veterinary Surgeons of examinations conducted by a large and powerful University such as, let us say, Oxford. Comment is unnecessary.

But, someone may ask, why worry about the maintenance of a single portal of entry to the veterinary profession, when the medical profession has so many portals? The present position of the medical profession in this respect is one of the best arguments for a single portal. It is a matter of common knowledge that the medical profession, as a whole, would be only too glad to imitate the veterinary profession in this particular. The General Medical Council—that body which is so often and erroneously supposed to be similar to the Council of the Royal College of Veterinary Surgeons, and is really so dissimilar—has long wished to obtain an Act of Parliament by which a single portal of entry to the medical profession would be secured. But the General Medical Council—unlike the slightly older Council of the Royal College of Veterinary Surgeons—was comparatively recently instituted in a profession that was already old; whereas the Council of the Royal College of Veterinary Surgeons came into existence simultaneously with the veterinary profession. The General Medical Council at its inception met with, and continues to meet with, opposition by vested interests in the shape of the old licensing corporations; and, consequently, it has never been able to achieve privileges and duties comparable to those of the Royal College of Veterinary Surgeons. Nevertheless, the General Medical Council has behind it a very considerable body of medical opinion in its endeavours to secure one portal of entry to the medical profession.

But when all is said, the matter resolves itself into the main question whether the public have a right to demand an adequate supply of veterinary practitioners equipped with an assured uniform minimum standard of knowledge and skill, and, if so, how can this standard be most certainly assured.

Discussion.

Mr. Woods: I very much doubt whether our profession recognises the importance of what Dr. Bradley has brought before us this afternoon. My remarks will be principally confined to dotting the

"i's" and crossing the "t's" of what he has said. I do not think we have any need to conceal the name of the University to which Dr. Bradley refers, as we all know it is the Liverpool University which has commenced an effort to abolish our one portal system and to give diplomas of their own which shall confer a licence to practise. Now, in the first place, I want to say that I have always enjoyed the friendliest relations with the Liverpool University—indeed, I am at the present time receiving their hospitality; that is, I asked their permission to attend odd lectures on a certain subject in which I was interested. This was not only freely granted me, but they absolutely refused to accept any fees, so that I have grateful recollections of their kindness to me personally. In dealing with any question I always like to commence by considering the views of the other side, and the views of the Liverpool University may, I think, be fairly stated as follows:—That, while they can grant a licence to practice to medical men and dentists, they are refused permission to grant licences to practise to veterinary surgeons, even though their standard might be higher than our own; that the dignity of a University demands that their examination should be accepted as sufficient; and that they should not merely be a teaching school for students, and be compelled to have their students examined by an outside body I think that is a fair statement of the official feeling of the University. Now let us consider our position—and let me say first of all that we are not the only body for which the University cannot grant a licence to practise, they cannot grant a licence to practise the law, nor do they examine sanitary inspectors, although they teach for the examination. I now want to give you the history of the formation of the Liverpool school so far as I was connected with it. Before the school was formed letters were sent by Sir Robert Boyce to a number of representative veterinary surgeons asking them to attend an important meeting at the University with regard to veterinary education. I attended the meeting and soon discovered that it was called to consider the possibility of establishing a veterinary school in connection with Liverpool University. Professor Boyce (Professor of Pathology) was in the chair, and his contention was that no University was complete without a veterinary section. The veterinary surgeons present were, so far as I could gather, all in favour of the idea. I did not oppose it, but two objections occurred to me, and when my opinion was asked I voiced both of them. I have a perfect recollection of saying, "If you ask me if there is any necessity for the formation of a new teaching school to supply the needs of the veterinary profession, I say most distinctly there is not. I would very much prefer to attend a meeting with the view to reducing the present number of teaching schools rather than increasing them, but if you are determined to establish a school in Liverpool I suggest to you the advisability of endeavouring to transfer one of the present existing schools to Liverpool rather than to create an additional one." Whether I was the originator of that idea or not I do not know, but the next thing I heard was that Professor Boyce was in Edinbrough in connection with such a transfer. The next thing which was suggested by more than one present was as to whether a powerful University would be satisfied to be a mere teac ing school and have their students examined by an outside body. Professor Boyce had apparently anticipated this question, and his reply was that he was a great admirer of our one portal system, that the medical profession would give worlds to have a system like ours, that there was not the slightest fear of any attempt to interfere with it, and, indeed, that what he thought would happen would be the abolition in the medical profession of these numerous diplomas, each of them giving a right to practise and the substitution therefor of a State Examination which alone would give the right to practise, while any degrees given by any University would be merely the cachet of that particular University. I would add that I have never yet spoken to any general practitioner who did not deplore the multiplicity of degree-granting bodies, each degree conferring a licence to practise. I can give you a concrete example in my own town, where two plates within a few feet of each other each announced that both practitioners possessed the degree of M.D. One of these two was M.D. of Cambridge University, the highest degree granted by the University; while the other was M.D. of Cork, the only degree, I understand, granted by that body. I am not going to assert which is the better of these two degrees, but I think I am justified in assuming that in all probability they were not of equal value. We have this great advantage, that if you see "Veterinary Surgeon" after a man's name, you know he has passed an examination which is considered by the representatives of the veterinary profession as being a sufficient guarantee of that man's ability to practise his profession.

Mr. GOFTON: I have little to say, since I am in full agreement with what has already been so well stated by Dr. Bradley and Mr. Woods, but I would like to refer briefly to one or two points. I think a good deal of what has been said might be summed up very briefly by saying that although the one portal system is a very valuable asset to the veterinary profession it is a much more valuable asset to the general public, in this respect, that it ensures to the public a uniform minimum of ability, of efficiency and of the knowledge which the veterinary surgeon must possess if he is to carry out the work which he is expected to perform. It is clear to me that if the power were given to one educational body to grant its own degrees licencing to practise veterinary surgery, the same privilege could not well be refused to similar existing or new teaching bodies, and they would certainly demand it. There are distinct limitations to the number of students which the profession is capable of absorbing and the multiplication of teaching schools would make it economically impossible to provide in each the special facilities and instruction which are necessary to fit the veterinary student for the particular work of the profession he intends to enter. Dr. Bradley said, and I agree, that supervision of the examination standard by the

Royal College of Veterinary Surgeons would be an ineffective safeguard. But, it may well be asked, what prospects are there that the Royal College would be given the power to supervise and control the examinations of a much more powerful body, such as a University? I think it very unlikely that such a power would be granted, and very probable that a University which succeeded in breaking the one portal system would resent and resist with equal success the right of supervision.

Mr. BAIRD (Edinburgh) and others, having spoken in support of the views put forward by Principal Bradley, Mr. BAIRD proposed and Mr. T. M. INGLIS (Forfar) seconded that the following Resolution should be sent to the Royal College of Veterinary Surgeons, the National Veterinary Medical Association, and to the *Veterinary Record*:—

Resolution: "That the Scottish Metropolitan Division of the National Veterinary Medical Association, having discussed One Portal entry to the Veterinary Profession, and having regard to recent attacks made on the system, desires to record its considered opinion that a uniform minimum standard of instruction and efficiency cannot be secured by any modification of the one portal system, and that the multiplication of diploma-granting bodies licensing to practise would be contrary to the public interest."

This resolution was carried unanimously by the 20 members of the Society who were present.

Mr. GOFTON asked the members to express their thanks to Principal Bradley for the manner in which he had submitted his important address, and also to Mr. Woods for coming from Wigan to give them his views and for the very excellent contribution to the discussion which he had made.

A hearty vote of thanks to the retiring President for his conduct of the business of the Society during the past year terminated the meeting.

R. G. LINTON, *Hon. Sec.*

Notes and News.

The Editor will be glad to receive items of professional interest in these columns

The Toulouse Veterinary School.

The Finance Committee of the French Chamber, in its Agricultural Budget for 1923, proposed a reduction of credits with a view to the abolition of the Veterinary School at Toulouse, on the grounds (1) that since the war the number of pupils has diminished considerably in all the schools; (2) that the Toulouse school was to be demolished to provide for enlargement of the railway station; (3) that the candidates, who in fact prefer Alfort, could be accommodated easily at Alfort and Lyons.

This proposal aroused strenuous opposition in Toulouse and district. The municipal authorities, several members of Parliament, the General Council of the Department of Haute-Garonne, and the Agricultural Committee of the Chamber of Deputies, appealed to the Ministry of Agriculture and the Finance Committee. Ultimately the Finance Committee gave way, and the usual grant will be continued.—*Rev. Gén. de Méd. Vét., November.*

Diploma of Docteur-Vétérinaire.

A Bill is being introduced into the French Chamber to authorise the Veterinary Schools of France to grant, at the end of the course of studies, a diploma of "Docteur-Vétérinaire."

Provision is made for the drawing up of rules to decide on the conditions of award of this new diploma, both to new graduates and also to existing holders of a veterinary diploma.

A penal clause is included, prohibiting the use of the title "Docteur-Vétérinaire" or "Vétérinaire" by unauthorised persons; and also the use by veterinary surgeons, who are not also Doctors of Medicine, of the title *Docteur* without the qualificative "Vétérinaire."—*Rev. Gén. de Méd. Vét., November.*

THE KING'S LIVE-STOCK SUCCESSES.

At the Smithfield Club Show, the King, with entries from Windsor, won the Cup for the best heifer of any breed under two years old with a Hereford, two firsts, a second, and the Breed Cup and reserve for Herefords, and a first and the Breed Cup for Devons. A remarkable contingent from Sandringham secured three firsts and a second for Red Polls, and all the prizes for Highland cattle; two firsts, the Breed Cup, and the supreme Championship of the sheep classes—carrying with it the Prince of Wales's Challenge Cup—with Southdown wethers; and first and Breed Cup for Berkshire pigs.

The Prince of Wales sent a couple of shorthorns from the Home Farm at Stoke Climsland, and they won a first and second and reserve for the Breed Cup.

PERSONAL.

WYNN-LLOYD.—December 3rd, at Wynston, Carnarvon, to Mr. and Mrs. L. W. Wynn-Lloyd, a daughter.

Obituary.

Mr. T. D. LAMBERT.

The news of the death of the well-known Dublin citizen, Mr. Thomas Drummond Lambert, M.R.C.V.S., which occurred unexpectedly on Thursday, November 23rd, was, says the *Dublin Evening Telegraph*, received with very general regret.

Mr. Lambert was the eldest son of the late Mr. Thomas Drummond Lambert, F.R.C.V.S., and brother of the well-known cricketers. Like his father and brother "R. H.," he was a well-known member of his profession.

The late Mr. Lambert was born in Dublin on the 1st June, 1873, and obtained his diploma at the Royal (Dick) Veterinary College, Edinburgh, in 1898. He had connections with the Irish Turf, and also was a member of the Ward and Meath Hunts. He was the owner of the celebrated grey horse, Billy Costello, whose performance in the jumping enclosure at the Royal Dublin Society's Show at Ballsbridge created quite a sensation a few years

ago, and also of the well-known hackney stallion, Colonel Axworthy.

Mr. Lambert also acted as veterinary surgeon for several years at the Royal Dublin Society's Show. He was a first-class horseman, and expert shot, and a good amateur painter of horses.

ASTON, EDITH MARY.—On Sunday, December 10th, at Corve Street, Ludlow, Edith Mary (Ouita), the beloved wife of W. F. Aston, M.R.C.V.S, and only daughter of Edwin Hall, M.R.C.V.S., and Mary Hall, Mostyn House, Wellington. Aged 24 years.

Correspondence.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.
All correspondence must bear the name and address of the contributor for publication.
The Editor does not hold himself responsible for the opinions of his correspondents.

Those Subscription Arrears.

Sir,—It would be interesting to hear from you, sir, what response you have received to your articles pointing out the arrears amounting, I believe, to about £600 due to the N.V.M.A. I am in agreement with Professor Gorton that something drastic should be done. The Society certainly cannot afford to supply the *Record* to those defaulting members, irrespective of the fact that the amount due is reckoned as one of the assets when the cost of the production is budgeted for.

No doubt you receive your fair proportion of grumbles, but in biblical history the Egyptians complained they could not make bricks without straw, so, also, the fact is patent that the N.V.M.A. cannot carry on satisfactorily if it does not receive the utmost support from its members.
—Yours truly, J. WILLETT.
7 Harley Place, Harley Street, W. 1.

Constitution of the N.V.M.A.

Sir,—My letter of the 19th November has not invoked the discussion I expected concerning our Association. Under the circumstances, it may be allowable for me to carry the matter a little further. It would be more businesslike if the subscriptions were made payable in the first month of the year; any member not paying by the 31st January could be removed from the list, and of course also deprived of his *Record*. This would separate those who are loyal to the Association and those who are not. One great advantage of this method of subscription would be that it would enable the treasurer to arrange for the year's expenditure. At present there must be many volumes of *Records* sent out which will never be paid for, and yet which have cost money to print and distribute. Besides, it cannot be deemed undesirable that the N.V.M.A. should show that spirit of independence which the profession so sadly lacks.

Another point which needs attention is the lack of information regarding the state of the membership and finances. Would it not be possible to publish a list of the names of the members early in the year, and also a statement (detailed) of the pecuniary condition at the end of the financial year? At present the finances only come under the notice of the members at the annual meeting, seven or eight months after the balance is struck.
—Yours truly, BERNARD GORTON.
5th December, 1922.

The Indian Civil Veterinary Department.

Sir,—The discontent rife in the Indian Civil Veterinary Department cannot be allayed by merely writing to the professional journals. Some definite demands must be made, and made in the proper quarter and through the proper channel. The proper channel for such demands to be made is undoubtedly through the Council of the Royal College of Veterinary Surgeons, and the proper quarter is the Secretary of State for India.

The General Medical Council did much to improve the terms of the Indian Medical Service, and officers of the I.C.V.D. have a right to expect the Royal College to do something for them in like manner. Two years ago the Royal College did make a representation to the Secretary of State about the terms of the I.C.V.D., but their requests were indefinite, and nothing came of their suggestions.

All the British officers of the Government of India are now suffering very great hardship, and the time has arrived when something must be done for them if the administration of the country is to be carried on efficiently. The officers of the I.C.V.D. have been very unfairly treated in the past, and their reasonable and just demands have been passed over unheeded. They should try again once more before finally giving up the struggle. It is folly to make extravagant and excessive demands in the hope of obtaining something less. Fair terms should be demanded and pressed for with all insistence possible, and nothing falling short by one jot should be accepted, willingly. If fair terms are not now acceded, the only alternative is to retire quietly as soon as possible and make the best of a very bad job.

Officers of the I.C.V.D. have a right to demand terms as favourable as those accorded to the other Indian Public Services recruited in a similar manner and under similar agreements and regulations. It is no good to compare the I.C.V.D. with such services as the Indian Civil Service or the Indian Army or the Indian Medical Service, for they are recruited in a totally different way, and are on an entirely different footing. There can be no doubt that I.C.V.D. officers should be as well treated as officers of such services as the Forest Service, the Police Service, the Agricultural Service, the Engineering Service, or the Educational Service. All these services now start at about Rs. 500 a month. It is useless to ask for more as a special case for the I.C.V.D. officer, as the Government could not reasonably be asked to upset the general standards now set, but should other services receive better initial terms, the same concessions should be made to the I.C.V.D. On the other hand, it is all very well for the Government to say they intend to treat all alike in regard to initial pay, and then to send one man to a city like Calcutta or Bombay, and another to a station like Coimbatore, or even into the heart of the jungle, and expect them to be equally well off. The man in Calcutta or Bombay would be in dire poverty, whereas the man in the jungle or at Coimbatore would be comparatively comfortably situated.

Indian Civil Veterinary Department officers have a right to demand that they should have the opportunity of rising to a rate of pay comparable to that drawn by officers of similar length of service belonging to other services. There is no reason why I.C.V.D. officers' prospects should be less than those of Forest, Agriculture, Police or Engineering officers; and as such appointments as Directors of Agriculture, Superintending Engineers, Conservators of Forests, etc., etc., are not open to them, a grade carrying similar pay should be created, that is to say, Rs. 1750—100—Rs. 2150.

In order to rectify the inequality of spending power of the initial salary of I.C.V.D. officers, a compensatory allowance should be given to those officers who are stationd in the great cities of India in addition to the present house allowances. This demand should be placed first and foremost, for it is a crying need. The amount of the allowance must depend on the city, but 20 per cent. of the salary of officers under 10 years' service and 10 per cent. of the salary of those over 10 years' service for the more expensive cities and half these rates for the less expensive ones would be fair.

The maximum pension to which an I.C.V.D. officer can attain after spending thirty years in the service is less than that attainable by officers of almost all other services in India. This should be rectified, and pensions at the higher scale should be awarded to a proportion of I.C.V.D. officers. The maximum pension now attainable by an I.C.V.D. officer is Rs. 7500 per annum, whereas others can get Rs. 8500 per annum. The pension of Rs. 8500 per annum should be open to at least three I.C.V.D. officers.

Finally, it is suggested that each member of the I.C.V.D. who agrees with the justice and reasonableness of these demands should write to the Secretary of the Royal College of Veterinary Surgeons, asking him to draw the attention of the Council to these demands and expressing his approval of them, and asking that the Council should take the matter up and impress upon the Secretary of State the necessity of conceding them without delay.—G. McELLIGOTT, ex-officer of the I.C.V.D.

Hay as a Food for Sheep.

Sir,—I have just returned from a holiday, and find a short article in the *Veterinary Record* by Mr. J. H. Edwards, Kingston-on-Thames, and, as one who gave what was called "expert evidence" in the case mentioned, I might be allowed to say a word.

I was called in at a "resumed hearing," probably because I was born on a sheep farm, in the Highlands of Perthshire, and the sheep in question may have been fellow Highlanders.

I was, therefore, naturally acquainted with the condition that prevailed, when sheep were fed with hay on my native heath, during severe snow storms, some of which lasted over forty-eight hours, and no other food was available.

I was also convinced that sheep are regularly fed on hay in other parts of the United Kingdom during the winter months. I had also armed myself with knowledge gained from eminent Professors at Agricultural Colleges and other gentlemen acquainted with the subject, testifying how beneficial it is to feed sheep on hay.

Possessing all this material, and with fair knowledge concerning the giving of effectual evidence, I climbed the witness box, and fired my best artillery at what appeared to me to be an "immovable target." I said that "all sheep would eat hay if they were hungry," and, in my humble opinion, even now, I think it is all the Board of Agriculture expect of railway companies.

I may here state that another veterinary surgeon, a local man—I forget his name—gave excellent evidence for the Railway Company. He could speak with personal knowledge of sheep being regularly fed on hay during the winter months in his district, and could also speak with extensive experience of sheep being fed with hay whilst in transit by rail. He was perfectly convinced that sheep would eat hay—but his "artillery" also fell short.

I did not hear any more veterinary evidence, as I climbed down—fully convinced what the verdict would be.

In conclusion, I am perfectly convinced that there is no other food that sheep will eat better than hay in the winter months, when grass cannot be procured, and no other food that the Railway Companies can give that will fulfil the Board of Agriculture's requirements.

I think Mr. Edwards has nothing to fear if he keeps to his opinion and feeds sheep on good hay.—Yours faithfully, DUNCAN MACGREGOR, M.R.C.V.S., 16 Chapel Walks, Preston, Lancashire.

December, 1922.

A Case of Virulent Distemper.

Sir,—Whilst unwilling unduly to prolong this discussion and run the risk of boring your readers, I would, nevertheless, like to reply to Mr. Parsons' letter which appeared in your issue of November 25th. In the first place, Mr. Parsons is wrong in concluding that I resented the expression of his ideas, for, indeed, his first letter appeared to contain no ideas other than those of sarcasm and derision. He purports now to have explained to me "my errors," though the alleged explanation consists of nothing more edifying than a diagnosis of "fits." It is, perhaps, hardly necessary to reiterate that "fits" are only too constantly associated with distemper. If Mr. Parsons meant "epileptic fits" arising from true epilepsy, I must disagree with him that the symptoms and *post-mortem* lesions pertaining to this case simulated those seen in true epilepsy in the slightest degree. Has anyone known a temperature of 108° and a string of *post-mortem* lesions like those I described to accompany true epilepsy? The fits arising in distemper are undoubtedly *epileptiform*, but *not* epileptic, and there is a fundamental difference between the two.

Mr. Parsons considers that little can be learned from such a case as this, and contends that, in order to advance our knowledge, I should have recorded a series of cases. I regarded the case as most unusual, and certainly rare enough to preclude the possibility of recording a series. But if nothing has been learned from it, I am sorry, although my primary object in reporting the case was not to teach, but to try gnd gain information from other members who might have been confronted with a similar malady.

This desire has been gratified, for I read in this week's *Record* a confirmation of my diagnosis by no less experienced a man than Mr. G. Mayall. I have read of rapidly fatal cases of distemper in text books; Mr. Mayall reports five, and I feel sure that a case I attended some months ago was of a similar nature. It appears to me that all members would be following a more useful purpose if, instead of waiting to record "a series" of cases, they would report each case as it arose, for every vestige of clinical evidence must eventually become of value in helping to formulate new etiological or therapeutical ideas.

I fancy that even this little discussion will hardly have failed to interest many members, and prompt them to ponder a little deeper into the question of how distemper may present itself. It has been said that my treatment in giving morphia and applying ice was wrong, yet all college teaching, practically all text books, and my own experience, have indicated that these two lines of treatment are eminently suited to attacks of epilepsy. And it must be remembered that at the time they were administered I considered I was dealing with epilepsy. It was only the discovery of a high temperature *ante-mortem*, and inflammatory lesions *post-mortem*, which changed my views. Nevertheless, I can see no theoretical objection to the use of ice applied to the *head and spine*, for the effect should be to reduce the amount of blood in those regions, and thus diminish the nervous excitement.

There was nothing extraordinary in my ability to obtain ice at a late hour; it only required a little thought, and for Mr. Parsons' information I may explain that it was procured from a hotel. Moderate doses of morphia slightly quicken the pulse and temporarily raise the temperature, and for these reasons it was probably not so desirable in this particular case as it would have been in true epilepsy. At the same time, it quietened the dog, and that was my first aim. Upon discovery of the high fever and phenomenal pulse, I gave aconite, for medicinal doses of this drug slow the circulation in acute pyrexia, and lower abnormal temperatures. However, I am ever ready and anxious to learn, for in medicine I consider nobody has ever finished learning. But I like to feel that what is learnt is true and valuable, and not merely an untested opinion. I thank you, Mr. Editor, for the generous way in which you have allowed me to further encroach upon your space.—Yours faithfully, HAMILTON KIRK.

67 Wigmore Street, W.1, *December 2nd*, 1922.

[This correspondence must now close.—ED.]

The Editor begs to acknowledge the receipt of the following:—Royal Counties Association Report, from Major P. J. Simpson, Hon. Secretary; Communications from Messrs. J. C. Coleman and H. A. Idenden.

Diseases of Animals Acts, 1894 to 1914. Summary of Returns.

Period.	Rabies. Cases Confirmed. Dogs.	Rabies. Cases Confirmed. Other Animals.	Anthrax. Outbreaks confirmed.	Anthrax. Animals attacked.	Foot-and-Mouth Disease. Outbreaks confirmed.	Foot-and-Mouth Disease. Animals slaught'd as diseased or exposed to infection.	Glanders (including Farcy).* Outbreaks reported by the Local Authorities.	Glanders (including Farcy).* Animals attacked.	Parasitic Mange.* Outbreaks reported by the Local Authorities.	Parasitic Mange.* Animals attacked.	Sheep Scab. Outbreaks reported by the Local Authorities.	Swine Fever. Outbreaks confirmed.	Swine Fever. Swine slaughtered as diseased or exposed to infection
GT. BRITAIN.	No.	No.	No.	No.	No.	No.	No.	No	No.	No.	No.	No.	No.
Week ended 2nd Dec., 1922 ...	...	...	4	4	2	51	...	...	12	13	16	34	7
Corresponding Week in 1921	..	...	12	13	1	17	...	...	15	20	33	22	7
Corresponding Week in 1920	2	...	14	16	...	...	...	...	43	61	13	25	3
Corresponding Week in 1919	1	...	7	7	1	21	...	...	82	132	33	46	23
Total for 48 weeks, 1922 ...	1	...	460	531	1136	55289	4	4	941	1318	534	1237	462
Corresponding period in 1921	22	1	452	573	44	2975	11	44	1922	2912	511	1151	425
Corresponding period in 1920	34	...	402	478	79	10502	14	23	3367	5505	399	1720	688
Corresponding period in 1919	148	5	212	279	70	3066	22	58	4571	9008	321	2159	996

NOTE. The figures for the current year are approximate only. *Excluding outbreaks in Army horses.

IRELAND.												
Week ended 2nd Dec., 1922 ...	...	...	...	...	...	...	Outbreaks 3	13	9	58
Corresponding Week in 1921 ...	...	...	...	...	...	...	2	5	1	18
Corresponding Week in 1920 ...	...	...	...	...	..	...	...	8	...	...
Corresponding Week in 1919 ...	...	...	...	...	...	...	1	13	1	3
Total for 48 weeks, 1922	1	1	...	...	...	...	75	202	224	1279
Corresponding period in 1921 ..	1	1	7	77	...	...	74	249	112	58
Corresponding period in 1920 ...	1	1	...	...	1	3	90	314	13	38
Corresponding period in 1919 ...	...	...	.	...	1	1	135	256	31	96

NOTE.—The figures for the current year are approximate only.

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